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ABSTRACT

The study sought to identify and measure factors in course achievement in actual college courses acorss subject areas and instructors, and to assess their influence on indicators of learning or achievement in these courses. Data sources included: interviews with instructors in two introductory economics courses and one introductory biology course; students' grade point averages, academic aptitude scores, and course grades; hours per week students intended to study; expected course grades; and results of pretests and concept maps. In addition, 24 students were chosen to maintain narrative studying logs over the course of the semester. Correlations were found between concept map scores and final exam scores. Overall, the results illustrate the difficulty of assessing the contribution of studying to course outcomes and underscore the powerful influence of initial course success on later achievement. (JDD)

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The Role of Studying, Academic Variables, and Initial Course Success in Outcomes of College Courses

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The Role of Studying, Academic Variables, and Initial Course Success in Outcomes of College Courses

Ann J. Pace, Karol Walters, and John K. Sherk, Jr.

A common assumption among persons interested in the academic achievement of college and secondary students is that studying, or self-directed learning activity, on the part of these students does or should have an effect on academic outcomes. It is often taken for granted that what students do while studying affects course achievement. However, it has been difficult to document, especially in real classrooms, an independent effect of studying habits of specific study strategies on course achievement (Pace, Peck, & Sherk, in press). Part of the problem undoubtedly lies with the acknowledged limitations on the kinds of self-report measures ordinarily used to assess studying behavior and the difficulty of obtaining more direct evidence of strategy use. Additionally, the effect of studying strategies may not be consistent or strong enough, across students, to influence, independently, traditional measures of course achievement.

Existing investigations and discussions of studying, though, have underscored the important contribution of a number of factors for course outcomes. Such factors include students' background knowledge in the subject, general and specific aptitude, prior academic achievement (as judged, for example, by cumulative GPA), and even class attendance (Schuman, Walsh, Olson, & Etheridge, 1985). Analyses of academic studying (e.g., those by Biggs, 1984; an Thomas & Rohwer, 1986) have also emphasized the role of students' attitudes, motivation, and course expectations in academic achievement. While Nolen (1988) has demonstrated a relationship between motivational orientation and strategy use, she did not find that strategy use and reported course grade were significantly related. Thus, while reasonable arguments have been made for the importance of a variety of factors in course achievement, there is, as yet, little evidence to indicate the relative contribution of these various factors.

One purpose of the present study, therefore, was to try to identify and measure as many of these factors as possible in actual college courses, across subject areas and instructors, and then to assess their influence on indicators of learning or achievement in these courses. In addition, efforts were made to follow some students' studying decisions during the semester and to determine instructors' expectations for their respective classes.

To accomplish these aims, the cooperation of instructors of introductory college courses in an urban public university in the Midwest was obtained. During the first semester of this study, two different instructors of the same basic economics course participated. Because of the different structure of introductory courses in the natural sciences, a similar arrangement could not be made in the second semester. Instead, one section of an introductory biology course was included. Neither course had prerequisites. All of the participating instructors had had several years of experience teaching the introductory course in their subjects, though the biology instructor, whose primary responsibility was teaching, was somewhat more sophisticated about educational processes and concepts.

METHOD

The purpose of the investigation was reviewed with each of the instructors, and they were given the opportunity to ask additional questions. Each agreed to provide examination scores and other data for participating students and to permit the investigators to collect further in-class information. Each of the instructors also explained his view of the course and course requirements and explained his rationale for assignments and course structure. In addition, lengthy interviews were conducted with one of the economics instructors and the biology instructor following the end of the respective semesters. Although the two economics instructors generally agreed about the content of the introductory course, they used different textbooks and emphasized somewhat different material.

In seeking their participation, the general purpose and outline of the project were explained to the students in each class at the beginning of the semester. Those students agreeing to participate were asked to give the investigators permission to obtain their cumulative GPA's, their scores on a measure of academic aptitude, such as the SAT or ACT, and their examination scores and course grades. Participating students were asked, as well, to provide, in writing and anonymously, various kinds of information, such as their expected course grade, their major, their reasons for taking the course (course requirement, major, elective, etc.), the hours per week they worked, the hours per week they intended to study, both overall and for the course, their age, and the total number of hours for which they were enrolled that semester.

Students were also asked to volunteer to keep narrative studying logs over the course of the semester. Eight students in each class were randomly selected to do from those volunteering. Orientation sessions and a sheet of instructions explained to these students how to keep these logs, which were to be a record of how and why they studied outside of class.

In addition to all the above information, the biology instructor had administered a pretest, a measure of prior subject area knowledge, and he made those scores available. An additional measure of learning in each course -- a modified concept map (Novak and Gowin, 1984; Surber, 1984) -- was developed and used for each subject area. Anecdotal evidence had suggested that many instructors viewed successful achievement in their courses in terms of students' learning and understanding certain course concepts. The invesitgators thought that traditional measures of achievement, such as short-answer and multiple-choice exams, might not sensitively assess this kind of comprehension. Therefore, course instructors and advanced graduate students helped to develop concept maps in each subject, and skeleton maps, with appropriate terms and distractors listed below, were also used an an end-of-course assessment.

ANALYSES AND RESULTS

As the exams, assignments, and conditions within each class were not comparable, even for the same subject, separate analyses were performed for each class. In each case, correlations between concept map scores and final exam scores were significant, but only moderate (Pearson r's of .43, .37, and .31, respectively, for the two economics courses and the biology course), indicating that these measures were, as expected, related, but that they also assessed somewhat different knowledge. For each class, two sets of multiple regression analyses were performed, one analysis of each set using final exam score as the dependent variable and the other, concept map score. Similar predictor variables were entered into each analysis; they included items asked on the student questionnaire (e.g., age, hours worked, etc.), cumulative GPA, and first exam score. (Insufficient numbers of SAT or ACT math scores were obtained to be included in the comprehensive analyses.) In addition, the pretest score was used for the biology course.

For both economics courses, in the analyses which used the final exam score as the criterion, the only variable which explained a significant portion of the obtained variance was the first exam score (46% in one case, 44% in the other). In the similar analysis for the biology course, the first exam score explained 11% of the obtained variance. Small, additional proportions of the total variance (3%, 2%, and 1%, respectively) were contributed by the pretest, age, and hours studied per week.

With the concept map as the dependent variable, there were no independently significant predictor variables for one of the economics courses, while for the other one, the first exam score again was the only variable to predict a significant portion of the obtained variance (41%). In the concept map analysis for the biology class, the score on the first exam contributed 18% to the obtained variance, age and additional 2%, and hours worked per week, 1% more.

DISCUSSION

These results serve to re-emphasize the importance of initial success in a course on final outcomes, however measured. In only one course was a pretest available, but, even in this case, the first exam score was the best predictor of eventual success. This first assessment, therefore, seems to serve as a gauge of students' aptitude for and interest in the course, regardless of subject area or instructor.

Most of the students who volunteered completed their studying logs, but there was little consistency in their comments. Some students mentioned problems they were having with the class, the instructor, or the text; others did not. Available reports do not indicate that test results had a pronounced effect on the kind or amount of studying done.

However, student journals do provide some insight into possible reasons for the difference in results on the concept map analyses for the two economics courses. In the class for which there were no significant predictor variables in this analysis, student comments revealed that students found the instructor's lectures confusing and that they did not correspond with the assigned reading in the class text. Interestingly, this instructor had helped to prepare the concept map assignment. The other economics instructor used a textbook he himself had written, and students reported that the assigned reading reinforced concepts he emphasized in his lectures. In addition, they commented that he explained major concepts clearly, even though they were frustrated by the limited feedback he provided concerning course achievement.

The instructor interviews revealed, again, the emphasis they placed on basic concepts in their subjects. The biology instructor, in particular, commented that he found the results of the concept map "enlightening" and indicated his disappointment in the results (comparatively low scores) by suggesting that there may be a possible

mismatch between his expectations and reality. Both instructors, though, said that they did not tell their students very much about their specific expectations for them in their courses.

Overall, the results illustrate once more the difficulty of assessing the contribution of studying to course outcomes, especially given the impersonality of large, introductory college courses in which students may feel rather anonymous and in which feedback is rather infrequent. The results also underscore the powerful influence of initial course success on later achievement.

Subsequent studies should utilize more in-depth measures and specific probes to monitor how students' perceptions and studying decisions vary through the semester as they learn more about the instructor, course expectations, and their own achievement. Additionally, further exploration of the relationship between instructor's expectations regarding conceptual understanding and actual course outcomes should be useful and informative, and some type of concept map may be a worthwhile assessment tool in this effort.

REFERENCES

Biggs, J.B. (1984). Learning strategies, student motivation patterns, and subjectively perceived success. In J.R. Kirby (Ed.), Cognitive strategies and educational performance. Orlando, FL: Academic Press.

Nolen, S.B. (1988). Reasons for studying: Motivational orientations and study strategies. Cognition and Instruction, 5, 259-287.

Novak, J.D., & Gowin, D.B. (1984). Learning how to learn. New York: Cambridge University Press.

Pace, A.J., Peck, A.R., & Sherk, J.K., Jr. (In press). Self-reports of text studying practices and course achievement: Is there a relationship? Journal of College Reading and Learning.

Schuman, H., Walsh, E., Olson, C., & Etheridge, B. (1985). Effort and reward: The assumption that college grades are affected by quantity of study. Social Forces, 63, 945-966.

Surber, J.R. (1984). Mapping as a testing and diagnostic device. In C.D. Holley & D.F. Dansereau (Eds.), Spatial learning strategies: Techniques, applications, and related issues. New York: Academic Press.

Thomas, J.W., & Rohwer, W.D., Jr., (1986). Academic studying: The role of learning strategies. Educational Psychologist, 21, 19-41.